Architectural CONCRETE

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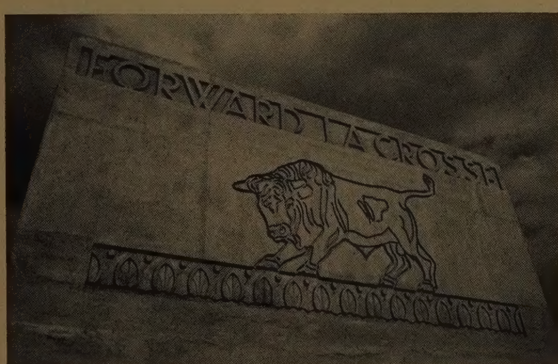
Exchange Building—La Crosse, Wis.

By Dr. Frank J. Hoeschler*

EXCHANGE BUILDING in La Crosse, Wis., is the most recent in a series of speculative building adventures in hich I have been engaged during the past 12 years. And is structure, a six-story commercial building, is the largest, est and most exciting of them all. It is entirely concrete, hich gives it considerable distinction and contrast against e background of the more conventional construction in e La Crosse business district; it is boldly modern in design; nd it is one of the most economically constructed buildings the state.

This building's attractive appearance does not depend, owever, on ornamental details or enriching materials. In ct, aside from some molded detail about the entrance hich forms a suitable frame for the building name, the nly other decorative detail on the structure is a life-size ull molded intaglio against e smooth concrete wall of he elevator penthouse. The ull, which attracted con- iderable curiosity after the orms were stripped from he top of the building, is uch more than a decora- ive *tour de force*. It is a sym- ol which explains the main eason why this building was rected during these uncer- ain times.



The bull on the penthouse wall is a symbol of the owner's confidence in the future of La Crosse, Wis.

The significance of the expression "bull" as used in business and finance is understood to mean a force of creative power. Being "bullish" about anything means that one has faith in it, that it will grow in value and importance. For instance, I am bullish on La Crosse. I feel that this city is going to be increasingly prosperous, that it will grow into a city of 60,000 within the next 15 years, and that real estate values in the city and especially in the Fifth Ave. district where I have been building for a decade will double and possibly treble. Hence the bull, and a very rampant one at that, will rule over Exchange Building.

Of the nine structures which I have built or remodeled on Fifth Ave., this is the first one of architectural concrete. When I started building there was no architectural concrete in this entire region. But I was always interested in the possibilities of concrete as it was used abroad and in certain areas of this country; and it was inevitable that some day I would muster up the courage or whatever it takes to explore this interesting building material myself. The results have been most gratifying, for it is quite certain that the proper use of concrete in design and construction of this building has produced an outstanding structure at a cost of at

*Owner and manager, Exchange uilding, La Crosse, Wis.

least $35,000 less than it would have been had ordinary materials and procedures been used.

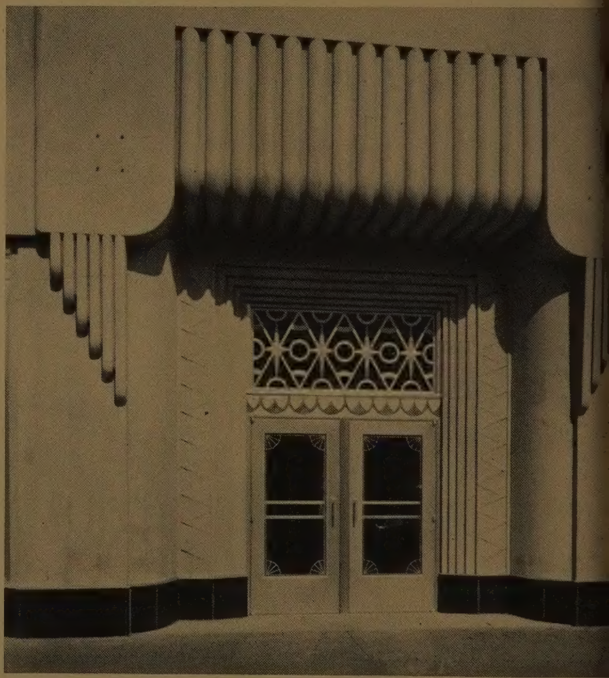
One of the most interesting economies was the saving of about 11 ft. or one full story of building height through the use of flat slab concrete floors. By eliminating beams and drop panels, room height throughout most of the building is uniformly 9 ft. from floor to ceiling. This has other advantages, most notable of which is the ability to arrange partitions to suit the slightest whim of any client without the hindrance and limitations of ceiling beams and panels.

Other economies occurred in the finishing of the interior. For the majority of ceilings it was only necessary to apply acoustic plaster directly to the ceiling slab. In other rooms the slab ceiling is painted. There are no expensive false ceilings in this building. Before the building was designed and the property acquired, it was quite definite that it should be a structure of modern design, incorporating in it all the conveniences of new commercial buildings in large metropolitan areas, including year-around air conditioning. As the idea of the building developed, the possibilities of using concrete became more and more attractive, especially the adaptability of concrete to contemporary architecture and the well-known economies to be achieved with this material. It was quite logical, therefore, that in selecting the architect he should be one with sufficient confidence in concrete and his ability to work in it to undertake a large project.

Such an architect was J. Mandor Matson, of Racine and La Crosse, who two years before had enjoyed a pleasing success in the design and construction of a fine school building at Fontana, Wis. (*see* ARCHITECTURAL CONCRETE, *Vol. 5, No. 4*). It was not difficult to get together with Mr. Matson on the design, for my impression of what the building should look like and his early sketches soon agreeably merged together.

The dominant feature of the design is the projection of the spandrels about 4 in. from the face of the wall to produce strong and interesting shadow lines. These projected spandrels also provide deep reveals in which air conditioning and heating units are installed flush with the interior walls. All lighting and plumbing installations are concealed in furred-out portions of the columns which are easy to get to when alterations are desired. The corner of the building is curved for architectural effect to produce a graceful, modern line, and also to set the building back from the corner of the rather narrow intersection. This was a very effective device for giving the building the appearance of a more spacious setting without sacrificing any large amount of usable interior space. The windows in this curved portion

Flat slab concrete floors saved a full story in height of the Exchange Building, a six-story office structure designed by J. Mandor Matson, architect of Racine and La Crosse, Wis. Standard Construction Co., of Minneapolis, was the contractor.



Only decorative details are on the penthouse wall and around the entr
—all detail was molded in milled wood forms.

e ordinary flat glass and regular aluminum sash.

Concrete surfaces were all formed against plywood ıich, above the second story, was reused for each lift ithout damage or discoloration to the concrete. All con- ete used on the building was ready-mixed according to r specifications and brought to the job as needed. Care- l check was made at the mixing plant to insure a uniform

ant feature of the design of this building is the 4-in. projection of drels to give strong horizontal shadow lines. The curved wall raceful line and sets the corner back from the building line.

ix, and several alterations were made in the early stages the work to improve it.

As the photographs reveal, the concrete stripped from e forms as clean as one could possibly desire it, and this, think is due to the way in which the material was spaded the forms. All concrete placing was done so carefully that e work of patching and finishing was reduced to a mini- um, and this also has added a saving to the splendid onomy of the construction.

Concrete work started in August of 1940 and proceeded ell into the winter and without interruption despite severe eather. When it became cold the concrete mix was heated fore it was brought to the forms, and tarpaulins were nployed to keep the material warm after it was placed. ne night after concrete had been placed during the day e temperature went to 19 below zero. The concrete, how-

Looking up at entrance to Exchange Building.

ever, was not damaged by this or any other cold snap.

The interior of the building above the first story, which is a store with 18 ft. 6-in. ceiling height, is simply finished with plaster, painted walls and ceilings and asphalt tile floors applied directly to the concrete slabs.

On the exterior the building was finished by applying cement grout over all surfaces and removing it with light rubbing with carborundum stones. The exterior texture is smooth and of a uniformly light texture.

The completion of the building has brought gratifying approval from all sides. The insurance company which aided in financing the structure claims it is one of the finest commercial buildings in which it is interested. It is pleasing to note also that the insurance underwriters are giving the building the lowest fire insurance rating in the city. More positive approval is the fact that the building was 80 per cent occupied before it was officially opened June 14, 1941.

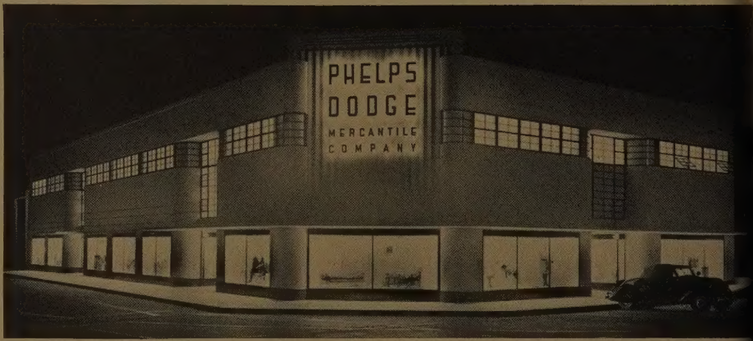
As for myself the work has progressed so satisfactorily that any future buildings I may undertake, and I hope there will be more, will be architectural concrete. This, I think, is about the strongest way in which an owner can express his approval.

Exchange Building has 83 business suites. It was built at a contract price of $176,228.

Store for Phelps Dodge —Bisbee, Ariz.

By Royal W. Lescher*

Sign wall at corner of Phelps Dodge Mercantile Co. store at Bisbee, Ariz. This two-story concrete building was designed by Lescher & Mahoney, Phoenix architects, and built by Del E. Webb, Phoenix contractor. (Right) Night view of store.



PHELPS DODGE Mercantile Co., a division of Phelps Dodge Corp., has recently occupied a new retail store building in Bisbee, Ariz. This store, which contains all the departments and appointments of a large city department store, is two stories in height and fronts on two important city streets. In design the building is modern, employing exposed concrete in wide, sweeping areas combined with bands of glass to achieve its attractive appearance. Except for the sign wall which is at the corner of the lot, the exterior walls of the main facades have strong horizontal treatment, emphasized by the alternating bands of glass and concrete, by flat concrete canopies, and by narrow rustications in the wall above the first story and at the coping line.

An unusual feature of the design is the manner in which the spandrel wall is curved into the columns at the second floor level to form deep reveals above each of the three entranceways. This curve is repeated where the coping meets the sign wall at the corner of the building to give this vertically fluted panel an appropriate frame. Concrete, exposed on the main facades, was cast against wood forms lined with "Tempered Presdwood" with the screen face

*Lescher & Mahoney, architects, Phoenix, Ariz.

ward the concrete. The concrete is finished with light-colored, oil stucco paint.

Design of the interior was determined by the location of various departments on a 154x84-ft. floor plan. These departments were so arranged in relation to each other that maximum convenience to customers and efficient administration were both made possible. Separate entrances were provided for unrelated departments.

The building has a full basement, including space under the sidewalks at the north and west sides. In addition to household furnishings, electrical, sporting goods and hardware departments, the basement contains a drug department, lunch counter and soda fountain. The remainder of the basement space houses mechanical equipment, stock and packing room, heating plant, employes' locker rooms and toilets. The basement is served by two public stairways, service stair and freight elevator.

First floor sales space handles all kinds of general merchandise from groceries to jewelry and men's furnishings, while the mezzanine floor along the south and east sides of the building—which has about half the space of the first floor area—accommodates ladies and infants wear, alteration department, beauty parlor, and general offices.

Interior design of the building is entirely modern with plain plastered walls and paint finish relieved by metal bands and glass block panels. Concrete floors in the basement and stairways are finished with terrazzo. Floors at ground level have asphalt tile covering and the concrete slab of the mezzanine is finished with linoleum.

In planning the building the Phelps Dodge Mercantile Co., of which Andrew W. Liddell is general manager, gave as careful attention to the durability of the fixtures within the structure as they did to the permanence of the building itself. Accordingly copper, bronze and brass were used wherever possible to secure long life, freedom from rust and corrosion, and reduction in expensive replacements. Bronze and brass are used extensively in lighting fixtures, handrails, hardware and such small items as clock numbers, letters of the store name and decorative devices.

Copper was used for less decorative applications, such as refrigerator coils and hot and cold water lines throughout the building. In addition, there is 46,000 ft. of copper wire in the lighting and power systems.

Included as part of the building project were construction of a concrete retaining wall along the railroad to the south of the property and the paving of service driveways on the south and west sides of the building. The owners also cooperated with the Arizona State Highway Department and the WPA in paving the city streets with concrete at this location after widening the streets and setting sidewalks back for a distance of about 10 ft. These improvements effectively removed a bottleneck in city traffic.

Completion of this store building has, therefore, brought several distinct advantages to the town of Bisbee: it gives the town the conveniences of a large department store, a fine-appearing commercial building which should be an example for future construction, and has influenced city planning.

...decorative details limited to a few simple, molded devices, an interesting effect was obtained by curving the spandrel walls into the columns. Completion of this building gave Bisbee a real metropolitan department store.

CBS Transmitter for Washington, D. C.

By E. Burton Corning, Architect*

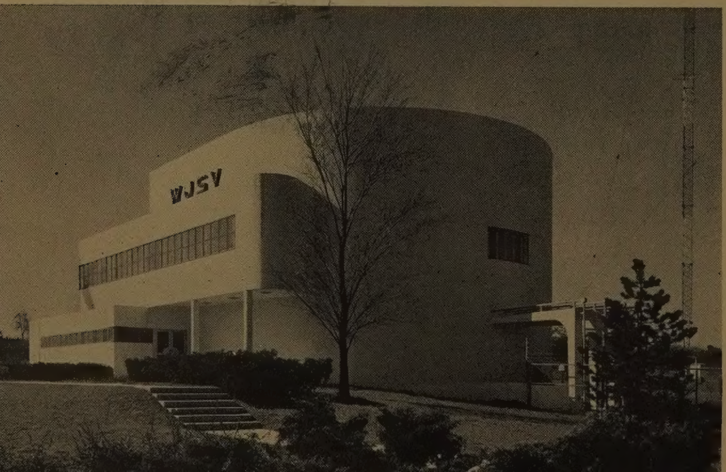
NEW 50,000-watt transmitting facilities for Station WJSV, Columbia Broadcasting System's key station in the nation's capital, is located in Wheaton, Md., about six miles from the Maryland-District of Columbia line. The site for this station was chosen for reasons peculiar to radio transmission—topography, elevation and soil conditions—but fortunately these requirements coincided with one of the most beautiful scenes in the East. Located within a short distance of Olney Pike, easily accessible from the capital by auto, the station has since completion lured an almost constant stream of visitors. This plant is considered by Columbia to be its finest and most up-to-date.

Since the building housing the transmitter has such a pastoral setting, it derives a feeling of complete detachment from the busy life of today. The whole ensemble—needle-like towers and simple masses of the structure—seems literally to grow out of the landscape. It is quite appropriate, for the science of radio deals with the elements, that the building should fit in so intimately with nature.

The function of the plant was the controlling factor in the design of the building, a fact which is easily recognized when the exterior of the building is studied. The observers' gallery is expressed strongly by the long strip of windows on the main floor. Access to the gallery is by a spiral stairs at the left which leads to a circular promenade around the transmitter equipment. The control desk is in a room depressed below the gallery and is in plain view of the circular corridor through a plate glass screen.

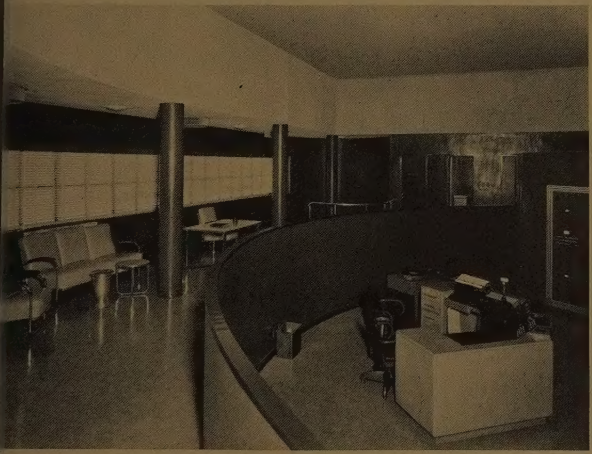
The structural scheme and the spirit of the problem seemed to make mandatory the use of architectural concrete, and with this material it was no problem to express

*Washington, D. C.



Curved lines and an effective arrangement of simple masses characterize new transmitter station for WJSV, Columbia Broadcasting System station at Washington, D. C. Located at Wheaton, Md., the building was designed by E. Burton Corning, architect, and built by George Martin, contractor, both of Washington.

nction of the building was the controlling factor in the design. The observers' gallery is expressed strongly by the long strip of windows across the fro



Control desk with circular promenade for visitors.

the plan and function with complete and pleasing frankness.

Specifications for the concrete followed closely those used successfully on the large architectural concrete studio building built for CBS at Los Angeles (*see* Architectural Concrete, *Vol. 4, No. 3*). Ready-mixed concrete was used throughout, the water-cement ratio, the aggregate grading and the proportioning being checked closely to insure proper workability. A mix containing a minimum of 6 sacks of portland cement per cu.yd. of concrete was used.

It was required that the carpenters building forms for exposed concrete be skilled men whose ability could be demonstrated to the satisfaction of the architect. It was also required that for each concrete buggy there be one man to puddle and tamp the concrete in the forms.

The building was constructed without the use of a hoist. A bottom-discharge hopper received the concrete direct from the ready-mixed trucks. This hopper was hoisted into the air and swung over the edge of the building by a tractor crane to discharge the concrete into buggies.

The curved walls caused no difficulties in form layout and framing. Plywood was used for all wall forms with vertical studs set to sill lines and wales cut to fit the wall curvature. Alignment was maintained by inside bracing measured radially from a center point.

No honeycomb whatever was found when outside forms were removed, proving that with a proper mix and care in placing good results are obtained.

The work was inspected on almost a 24-hour basis by James L. Middlebrooks, supervising engineer for the Columbia Broadcasting System, and by the contractor's superintendent. On completion of the forming we decided to paint the concrete a pleasing "Spanish White" to gain effective contrast with the landscape.

Landscaping about the building was designed by Major F. T. Norcross, of Washington. New trees, shrubs and wide grass areas are now coming into their first full summer's green to make complete the project on which all of us worked so hard to achieve an outstanding example of honest beauty.

New Government Buildings in Florida of ARCHITECTURAL CONCRETE

THE U. S. Public Buildings Administration has recently designed a number of federal buildings for the southeast coast of Florida. Among them are two post offices, a customs house and two quarantine buildings. The region is known as the "hurricane belt", not because the bad winds blow every day or very often, but because of the damaging intensity of the storms that do occur. It was quite reasonable, therefore, that the Government should build these structures of architectural concrete, designing the walls in thickness from 10½ to 18 in. to assure safety from hurricane damage.

United States Post Office at Cocoa, Fla., was erected by J. M. Raymond Construction Co., Jacksonville. It has 10½-in. walls, formed against plywood and finished with portland cement paint. Floors are 4½ and 6-in. concrete beam and slab.

Post Office at Lake Worth, Fla., has 12-in. reinforced concrete walls and 6-in. solid slab floors. The plywood formed walls were brushed with grout, rubbed down with burlap and finished with buff portland cement paint. Algernon Blair, of Montgomery, Ala., was the contractor.

ort Everglades Custom House
olid slab on concrete piling, an

Two buildings at the Miami Quarantine Station, Fisher's Island, Fla. Building above is a warehouse, the structure below houses officers' quarters. Walls re 12-in. concrete and floors and ceilings are 6-in. slabs. Henry Datner, of Detroit, Mich., was the contractor.

Broadway-Pasadena, a new building in Pasadena, Calif. brilliant example of modern chandising through the aid attractive building. Design Albert B. Gardner, North wood, architect, the mechanic structural engineering was d Holmes & Narver, Los An C. L. Peck, of Los Angeles, wa eral contractor.

Broadway Store for Pasadena

By Albert B. Gardner, Architect*

BROADWAY-PASADENA, a new architectural concrete store in Pasadena, Calif., is more than a store building. It is concrete evidence of a successful and progressive organization and its confidence in a growing community. On the construction canopy was lettered in bold type: "To better serve Pasadena and surrounding communities."

*North Hollywood, Calif.

This legend which stated the aim of the store also reflected the spirit with which the building itself was conceived, designed and erected.

Malcolm McNaughten, president of the Broadway Department Store, stated shortly after the store was opened: "Public response to the new Broadway-Pasadena has been most gratifying—the sales from the opening day have been

well above original estimates." This must indicate that efforts to make the building play its part in the merchandising scheme of this enterprise were successful.

Opening of the store, complete with fixtures and stock on November 15, 1940, set a new speed record. On April 24, the architect was selected. On April 25 the design was approved, and on May 15, just six months prior to opening day, excavation was started. This record, made possible only through the generous cooperation of all parties concerned and through the use of reinforced concrete, is naturally gratifying to the owners, architect and the contractor.

The big store is located on the northwest corner of Colorado and Los Robles Sts. in Pasadena on a site 184x300 ft., formerly occupied by the Maryland Hotel. The firm also owns property across Union St., directly north of the building, which has been paved for additional parking facilities. About 400 customers' automobiles can be accommodated at a time.

The building itself is 184x140 ft. with three floors of sales space and a basement devoted to service, shipping and mechanical equipment. Total floor area approximates)5,000 sq.ft. All floors and the roof are of flat slab concrete construction.

The mass of the building is simple with horizontal lines emphasized except at the street intersection where the corner tower has been dramatized as a sign structure to attract the public.

Street entrances are structural glass doors framed in bronze and set in deep reveals of Swedish Cipolino marble. They are treated with quiet dignity. Display windows are also framed in bronze and set against a field of black granite which extends the entire length of both street fronts up to the line of the marquee. The marquee is a cantilever of cellular steel the soffit of which is finished with plaster panels and floodlighted by means of concealed fluorescent tubes. The facia of the marquee is bronze with ornamental bronze brackets.

Above the marquee all exposed surfaces including the sign tower are architectural concrete with a sparkling finish. Forms were ⅝-in. plywood arranged in panels 4x8 ft., with

Interior departments are spacious, giving comfort to customers and emphasis to displays of quality merchandise.

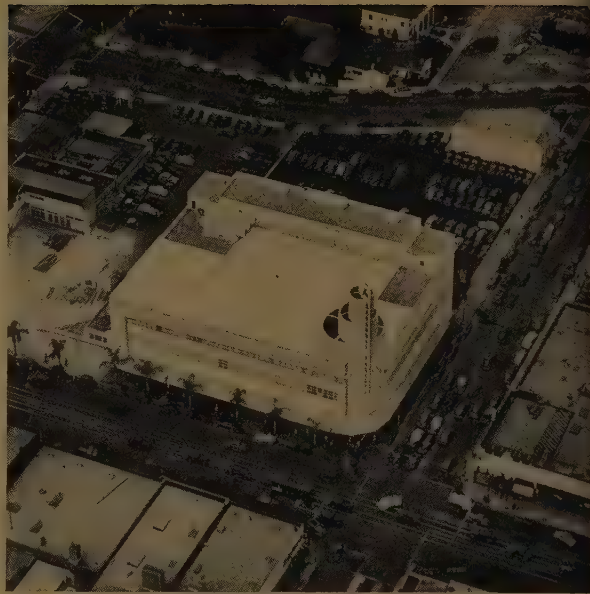
Forms for the exterior walls were arranged in 4x8-ft. panels which give a pattern to the surface. The finish of these surfaces is a sparkling portland cement paint.

all sides beveled to produce a slight fin at each joint. This jointing was designed to form a definite part of the architectural effect of the walls.

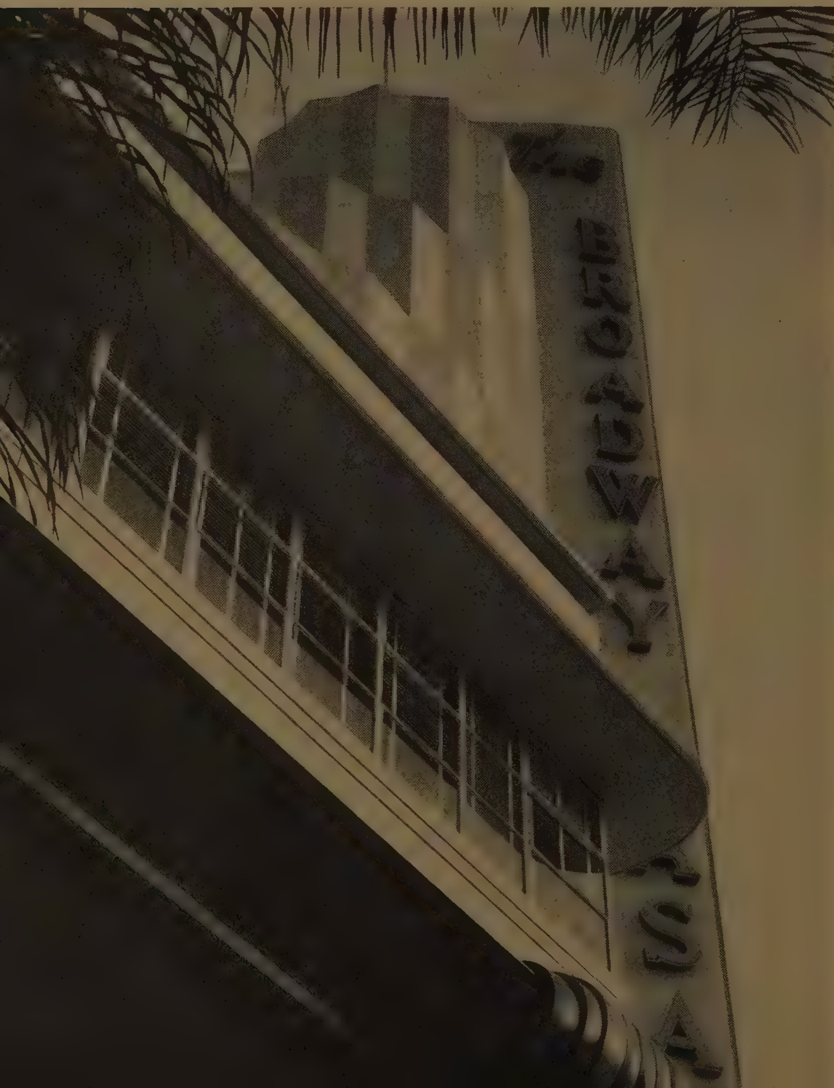
Inside, the building is designed for customer comfort and convenience and for the ideal display of goods. The arrangement strictly followed department layouts rather than the department layout accommodating itself to a conventional floor plan.

In designing the interior, full credit must go to R. E. Ashbrook, a 25-year employe of the store, whose thorough knowledge of merchandising problems and fixture requirements was made available to the architect in preparing details throughout the building.

The interiors are handled with restraint as a background for merchandise. Design and use of colors are unobtrusive, but still not negative. Passenger elevator doors on the first floor are simple bronze panels with etched ornament. Woodwork of the first floor, including display cases, is bleached mahogany. The decoration was intended to reflect richness without conflicting with the fundamental



This store, in the modern manner, is surrounded by parking areas for the convenience of customers.



purpose of the display spaces—the merchandising of goods.

Parking facilities at the north of the building have a framed entrance of black granite and bronze well protected from the weather by an ornamental marquee which gives direct access to the building.

In modern design, in appointment, in convenience to customers and in efficient operation, this building seems to satisfy the rigid requirements of progressive merchandising in which attractive appearance has no small part.

C. C. Alley, superintendent of construction, deserves large credit for the excellent work done throughout and especially for the fine concrete surfaces.

The tower is a design device intended to attract attention to the sign. The tower is made of three fluted concrete cylinders of diminishing diameters with one side of each flush with the sign.

30 Years of Concrete at Texas Sanatorium

Dormitory No. 10 (left) and the Administration Building (below) are one of the newest and the oldest of Texas Tuberculosis Sanatorium's 35 architectural concrete buildings.

By J. B. McKnight, M.D.*

SEVENTEEN miles northwest of San Angelo, Texas, in the center of the broad valley of the North Concho River, lies one of the largest communities of architectural concrete buildings in America. These buildings—35 of them—range in age from 30 years to three years, and house the only tuberculosis sanatorium operated by the state of Texas for white citizens.

When the first six buildings were erected in 1911 no

*Superintendent and medical director, Texas State Tuberculosis Sanatorium.

one called them "architectural concrete". They were just concrete buildings, designed to look as much as possible like all masonry structures of that time, and built of the only material available within many miles of this region. There was then, as there is today, ample gravel in the Concho River for a whole city of concrete buildings; and there were equally plentiful supplies of sand. With the major portion of materials for concrete lying in the ground near the site, it was only necessary to bring in cement and lumber to build the forms. Transportation was a costly matter in those days when the wide open spaces of Texas were even wider, and highways were nothing to speak of.

Although the first buildings were made of concrete because there was no other choice, this was not true of succeeding building programs where concrete was forced to compete with other materials on economy and performance. The fact that concrete has held its own over a 30-year period is sufficient evidence that these buildings have always met the requirements of this institution. There is no reason to believe that any changes in policy will be made in regard to future construction.

The sanatorium was set up as "an institution for the treatment and education of adults and children afflicted with early tuberculosis". It is not an asylum for incurables or a place to come and die. The purpose of the institution is to take tuberculous patients during the early stages of their infections, give them rest amid pleasant environment, together with the wholesome food necessary, and treat them in the splendid hospitals and medical units that form a large part of the sanatorium facilities. Cultural and educational activities are carried out all the time so that patients, instead of being isolated from the world and confined to a solemn, sickroom atmosphere, are made to feel that they are a part of a lively, healthy society.

Under this system of treatment a large number of buildings for different purposes is required. Dormitories for patients are pleasant and comfortable, with dining rooms and reading rooms where life goes on without hospital smells and tiptoe quiet. There is an auditorium where moving pictures are shown and where other types of entertainment, social and educational, are held. This building is designed so that on warm summer nights the side walls

Employes' Dormitory No. 2 (above) and Dormitory No. 9 (left) are two of the more modern buildings at the sanatorium where the recent history of architecture can be studied with concrete examples for almost every one of the past 30 years.

may be opened to permit circulation of fresh air. There are buildings for doctors and nurses, and quarters for the staff necessary to keep up the pleasant appearance of the grounds.

Since a large turnover of patients is the best mark of the effectiveness of our work, it is realized that the 1,000 beds of this institution accommodate many more than that number of people during any year. This means also that the cost of operating such an institution is large and that

1. **SUPERINTENDENT'S RESIDENCE.**
2. **GARAGE.**
3. **VISITING DOCTOR'S RESIDENCE.**
4. **DORMITORY No. 10**—Leonard Mauldin, architect; Templeton & Cannon, contractor.
5. **DORMITORY No. 8**—Peters, Strange & Bradshaw, architect; Bailey, Burns & Fitzpatrick, contractor.
6. **DORMITORY No. 1**—E. E. McAnnelly, architect; J. C. Joplin & Bro., contractor.
7. **NURSES' HOME**—Sanguinett & Statts, architect; McGregor & Henger, contractor.
8. **LADIES' LEAN-TO**—Henry T. Phelps, architect; Gordon & Jones, contractor.
9. **GIRLS' DORMITORY**—E. E. McAnnelly and Sanguinett & Statts, architects; Kuhlman-Blue and McGregor & Henger, contractors.
10. **PAINT SHOP.**
11. **DORMITORY No. 6**—Phelps & Dewees, architect; Tucker & Bigham, contractor.
12. **DORMITORY No. 4**—Sanguinett & Statts, architect; McGregor & Henger, contractor.
13. **DORMITORY No. 7**—Phelps & Dewees, architect; Shane & Dickey, contractor.
14. **SUBSISTENCE BUILDING**—Henry T. Phelps, architect.
15. **ADMINISTRATION BUILDING**—Henry T. Phelps, architect.
16. **CHILDREN'S HOSPITAL**—Phelps & Dewees, architect; Bailey, Burns & Fitzpatrick, contractor.
17. **DORMITORY No. 2**—E. E. McAnnelly, architect; Davis Bros., contractor.
18. **LIBRARY**—Phelps & Dewees, architect.
19. **OLD HOSPITAL**—Henry T. Phelps, architect; Gordon & Jones, contractor.
20. **MEN'S LEAN-TO**—Henry T. Phelps, architect; Gordon & Jones, contractor.
21. **POST OFFICE.**
22. **MEDICAL BUILDING**—Phelps & Dewees, architect; General Contracting Co., contractor.
23. **WOMEN'S INFIRMARY**—Phelps & Dewees, architect; Ramey Bros., contractor.
24. **BAKERY**—Leonard Mauldin, architect; Johnson Co., contractor.
25. **DORMITORY No. 5**—Sanguinett & Statts, architect; McGregor & Henger, contractor.
26. **MEN'S INFIRMARY**—Phelps & Dewees, architect; Granbery & Balzen, contractor.
27. **DORMITORY No. 3**—E. E. McAnnelly, architect; Davis Bros., contractor.
28. **AUDITORIUM**—John Becker, architect; John D. Westbrook, contractor.
29. **STOREKEEPER'S RESIDENCE**—Leonard Mauldin, architect; Johnson Co., contractor.
30. **WAREHOUSE**—Phelps & Dewees, architect; F. M. Reeves & Son, contractor.
31. **POWERHOUSE**—E. E. McAnnelly, architect; Kuhlman-Blue, contractor.
32. **ICE PLANT**—W. R. Griffin, architect; Will O'Connell, contractor.
33. **MACHINE SHOP**—W. R. Griffin, architect; Will O'Connell, contractor.
34. **FILTRATION PLANT**—Hood Pitts, architect; Theo Montgomery, contractor.
35. **EMPLOYES' DORMITORY No. 1**—Sanguinett & Statts, architect; McGregor & Henger, contractor.
36. **LAUNDRY**—Arthur R. Swartz, architect; H. H. Myers, contractor.
37. **EMPLOYES' DORMITORY No. 2**—Leonard Mauldin, architect; Johnson Co., contractor.
38. **DORMITORY No. 9**—Arthur R. Swartz, architect; Templeton & Cannon, contractor.
39. **DORMITORY No. 11**—Phelps & Dewees, architect; Will O'Connell, contractor.
40. **COTTAGE.**

maintenance of so many buildings must be kept to a minimum. At this point I can go back to the reasons why concrete buildings have been the approved construction.

The first buildings have required no maintenance aside from occasional repairs to floors and roofs which were not of concrete. This annoyance and expense has been overcome in all subsequent structures which have concrete floors and roofs. Throughout the buildings concrete has performed admirably, being easy to keep clean and sanitary inside and of pleasing appearance outside through the application of portland cement paint.

Quite naturally over a 30-year period during which 35 buildings were erected, a large number of architects were employed with several architectural styles resulting. There is not, however, as great a lack of uniformity in appearance as might be expected, for the buildings were elevated on more or less similar floor plans and are comparable in size and general shape. With exterior walls of the same material and color, the appearance of the whole group of buildings takes on more of the character of the new, modern structures than it does of the old designs.

Since I came to the sanatorium in 1914, my work has been that of an administrator and medical director and has included the planning and construction of 29 buildings. Throughout the years I have advocated the most modern architecture for sanatorium buildings. The architecture of these buildings has influenced the design of buildings of other sanatoriums in Texas and other states.

I have never cared for the appearance of widely overhanging cornices that seemed to characterize all buildings erected during the first 25 years of this century. But my protests were always met with well-worded reasons why I was wrong and wide cornices were right. However in 1935, Arthur Swartz, a San Angelo architect, banished the cornice with results that were most pleasing to me. Since then the tops of our buildings have been finished off with square or rounded corners that appear to be a reasonable way to end a concrete wall.

Some of our designers, through the years, have wanted to add other materials to the concrete for decoration or for emphasis of certain details. This was opposed and we are glad of it now for such gaudy additions would conflict with the mass effects achieved in our more recent buildings.

The sanatorium will probably continue to grow as it has in the past, serving ever-increasing numbers of Texas citizens. When new buildings are required they will be erected out of funds appropriated for specific purposes by the state legislature. And if all presently concerned with the growth and development of the institution have anything to say about it, new structures will continue to be architectural concrete buildings.

Dormitory No. 10 is one of the newest

The Old Hospital is one of the original

Dormitory No. 11 is another modern design.

walls formed against plywood and features a deep curved reveal at the entrance. It is finished with white portland cement paint.

has the pitched roof and overhanging cornices that characterized so many institutional buildings during the first quarter of the century.

n the grounds was designed with intention of achieving uniformity of style, but because they are concrete they harmonize well with each other.

This auditorium-gymnasium addition to an old school at Ventura, Iowa, was the second of two similar structures designed by Thorwald Thorson, Forest C Iowa, architect. Experience with the first project made it easy to determine methods and equipment best suited to the job. WPA built the structure.

Construction Details—Ventura Auditoriu

By Edward H. Dehnert*

CONSTRUCTION of the new gymnasium-auditorium addition to the Ventura, Iowa, consolidated school involved some problems common to any architectural concrete job, some common to any building of similar structural design and some peculiar only to this structure.

Since this building was similar in design to one built at Luverne, Iowa, the year before (*see* Architectural Concrete, *Vol. 5, No. 4*) it was possible to determine fairly accurately beforehand, the methods and equipment best suited to the job. The main section of each building is a gymnasium-auditorium combination with 62-ft. span arched rigid frame bents supporting a concrete slab roof. The front elevation and the sections connecting the new to the old buildings were quite different in the two projects.

The gymnasium-auditorium part of the Ventura project measures 62x103 ft. on the ground, with full basement under the stage measuring 20x62 ft. The section joining the gym to the old building is one-story with full basement and measures 17x54 ft. Front entrance lobby is 12x54 ft. Total square feet of floor space (figuring double for those parts with basement) is 9,684. The building contains 200,000 cu. ft.

Final cost, including approximately $5,000 for landscaping, sidewalks, retaining walls, play equipment and septic tank, was $64,000. This figures 29.5 cents per cu.ft. or $6.30 per sq.ft.

To determine the approximate quantities and sizes of form lumber, and the capacity and quantity of equipment, a thorough analysis of the building was made. This showed that there were 12,500 sq.ft. of walls, 2,800 sq.ft. of structural floor slabs, and 9,700 sq.ft. of roof slab to be formed. All lumber, including plywood to be used as sheathing, was figured for three reuses. (Plywood should be figured for six uses, but in this case by using it only three times, we were able to salvage about 90 per cent of it for use as sheathing in the ceiling.) The 25,000 sq.ft. of wall forms was estimated to require 3 bd.ft. of lumber per contact foot. The 4,400 sq.ft. of floor and low roof slabs was estimated to require 4 bd.ft. per contact foot, and the 8,100 sq.ft. of main roof slab was estimated to require 5 bd.ft. per contact foot.

*Construction superintendent.

Total board feet of form lumber required was then:

$$
\begin{aligned}
25{,}000 \times 3/3 &= 25{,}000 \text{ bd.ft.}\\
4{,}400 \times 4/3 &= 5{,}900 \text{ bd.ft.}\\
8{,}100 \times 5/3 &= \underline{13{,}500} \text{ bd.ft.}\\
\text{Total} \quad & 44{,}400 \text{ or say } 45 \text{ MBM}
\end{aligned}
$$

Of this total lumber to be purchased, 10 MBM was ¼-in. plywood and the remaining 35 MBM dimension umber divided between 2x4's, 2x6's and other sizes in pro-ortions needed. When the job was finished we found we ad used 3,600 lb. of nails in our formwork, 800 lb. of vhich were double-headed nails. These double-headed nails, incidentally, gave us an increase of about 20 per cent n the salvage value of the form lumber.

This original analysis also showed that the building vould contain 735 cu.yd. of concrete (including walks) to be reinforced with 29.5 tons of steel, and that the largest ingle run was to be 37 cu.yd. This 37-cu.yd. placement letermined that the mixer must be a 10-S, and with the ize of the key equipment known, determining the re-mainder of the concrete equipment was easy: a hoist, a -beam platform scale for weighing aggregate, 8 wheel-barrows, three 6-cu.ft. buggies (all rubber tired) and 3 ele-phant trunk hoppers each complete with 4, 7 and 10-ft. engths of trunk.

We made our own form ties, using 3,400 ft. of 5/16-in. cold drawn steel rods, 700 lb. of ¼x2-in. steel plates and ,400 5/16-in. nuts—total cost, 13 cents each. Listed among our small tools were two bullfrog gaffs which have no equal for handiness in removing spreaders from wall forms.

Because this was a winter job we also had to provide for heat. We purchased an old threshing machine engine, 400 ft. of 1¼-in. pipe and ten 18x20-ft. tarpaulins. With his equipment we heated our aggregates and mixing water and gave our concrete a live steam cure. We found steam heat far superior to the dry heat produced by salamanders, and it eliminated fire and suffocation hazards.

Our experience on the Luverne job had proved the value of a well-equipped shop for form fabrication. At Ventura we installed a table saw, joiner, band saw, drill press and power grinder. We also equipped ourselves with a bar bender, bar cutter and thread cutter for pipe instal-lations. Small tools included saws, hammers and shovels.

Construction procedure was a little different than that usually followed in constructing an architectural concrete building. The end walls, structural bents and roof slabs (complete with parapet) were constructed first. Keyways were left in both sides of each vertical leg of each bent, and curtain walls of concrete were placed later. These keyways were painted with an emulsified asphalt to insure breaking of the bond between leg and curtain wall. Expansion and contraction of the 100 ft. of concrete is absorbed at these joints.

End walls, rigid frame bents and roof slab were constructed first.

Reinforcement in place for the rigid frame bents.

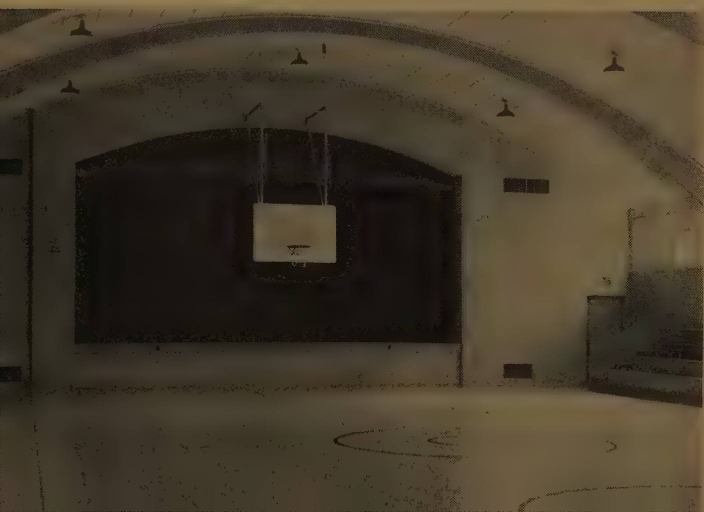
Keyways were left in legs of frames to receive concrete curtain walls placed later.

Built during cold weather, the concrete aggregates and water were heated. Steam was used to keep concrete in the forms from being damaged by cold.

Exterior walls were finished by applying portland cement grout and then rubbing it off to produce a light color.

Viking head over the front wall is one of two plaster mold details designed by Christian Petersen, Iowa State College art department.

The inside is easily accommodated to use either as an auditorium with large stage, or as a gymnasium for indoor sport events.



Construction of the roof bents and slab involved some study in order to arrive at the most economical methods of forming. The first two bents and the slab, out to a point half-way between the second and third bents, were formed at one time. A single run of concrete, however, took in one bent and roof slab on either side to the middle of the slab span. After the concrete in bent No. 1 and the connected slab had attained their strength, the forms were dismantled and erected to form No. 4. The placing procedure for bents and slabs was as follows: The leg forms were filled first, then the forms from springing line to about half-way to the crown, and then the crown section. All forms were treated with form lacquer which seemed to give us lighter concrete surfaces and protected the lumber much better than oil.

Specifications called for a maximum of 6½ gal. water per sack of portland cement, and a minimum of 5½ sacks of cement per cu.yd. of concrete. Actually we used about 5.8 sacks of cement per cu.yd., and our aggregate proportions were 255 lb. fine aggregate to 290 lb. coarse aggregate. Fine aggregate was a regular concrete sand, well graded but deficient in material passing a 50-mesh screen. In order to provide better workability and to prevent sand-streaking due to our watertight forms, we blended 10 per cent blow sand (90 per cent passing a 50-mesh screen and 40 per cent passing 100 mesh) with our regular sand so that the final sand contained 18 per cent passing a 50-mesh and 5 per cent passing a 100 mesh. We used coarse aggregate of 1½-in. maximum size, but had it delivered to us in two sizes in order to prevent segregation in the stock pile and subsequent pocketing in the wall. With one stock pile of material from 1½ to ¾ in. and the other from ¾ to ¼ in., we recombined this 50-50 at the mixer and were sure of a uniform mix.

The blow sand used for blending cost us $1.50 more per ton than the regular sand. This sounds like a high price at first, but we needed these fines in only about 400 yd. of concrete. With approximately ¾ ton of sand required per cu.yd., the extra cost of this blow sand was only $45. The additional cost of splitting the coarse aggregate was 10 cents per ton. So, for the total of 625 tons required, the extra cost was $62.50.

The total cost of $107.50 for refinements in aggregate was more than offset by the increased workability of the mix and the excellent appearance of the walls after stripping. All the honeycomb on the job could be covered by a gunnysack and we had no sand streaks at all.

Casting the two large figures in relief against plaster waste molds was not as difficult as we had anticipated. One of these is a basketball player about 9 ft. in height which decorates the pylon at the northwest corner of the building, and the other is a Viking head which gives a final dress-up

ouch to the front elevation. The models and the plaster molds were made by Christian Petersen, head of Iowa State College art department, from architect's sketches.

These plaster molds were fitted into the formwork with joints rabbeted to prevent leakage. Plaster surfaces were given two coats of shellac and a coating of form oil. The same mix was used against these forms as was used in the rest of the building. Before placing the concrete, however, a sheet of canvas was dropped down between the form and the concrete so that the falling mixture would not injure the plaster details. This was followed by the regular puddling procedure. The results were gratifying, all details in the finished figure being practically as clear as the original.

For final treatment, all wall surfaces, including the sculptured figures, were cleaned down with a cement and sand grout mixture. Instead of the usual mixture of 1 part white portland cement, 2 parts grey portland cement and 4½ parts sand, we used 1 part white, 1 part grey and 3 parts sand. We had the same ratio of cement to sand, but a higher proportion of white to grey cement.

The building is appreciably lighter in color than the Luverne job, due at least in part to this change of clean-down mixture. This treatment cost about 3 cents per sq.ft. for labor. The materials cost was negligible.

Architectural Concrete in Oklahoma

...ce to City Hall, Chickasha, Okla., designed by Architect Paul ... of Chickasha and built by Cowen Construction Co., Chickasha.

By Paul Harris, Architect*

WHEN concrete is used as an architectural medium it has no fundamentalist traditions to live up to, or to live down. It is not so associated with familiar forms that the public expects every new building to resemble all old buildings. Each new project approached with the idea that it will be executed in concrete, holds the promise that a solution can be found somewhere between the ideal and the budget that will satisfy both the architect's urge to do something different and the owner's desire for the most that the money can buy.

Having thus contributed another definition for what is fast becoming a classic phrase—"freedom of design in concrete"—I can proceed now to describe what is being done with concrete in Oklahoma where the material, architecturally, is comparatively new.

My part in developing architectural concrete in Oklahoma has been done in the past three years, and among the examples of it are a city hall at Chickasha, an auditorium and a school at Lawton, and dairy barn buildings at Cameron College near Lawton. In my opinion at least, these buildings represent designs and structures that could not be done as well nor as economically in other comparable firesafe materials, and the experience gained in following these jobs to their conclusion has convinced me

*Chickasha, Okla.

The windowless central mass of the Chickasha City Hall building encloses a large storage vault.

Two views of the Emerson School Auditorium at Lawton, Okla., a building whose curving front wall follows the curvature of the rows of seats and the side walls bear in toward the stage. Designed by Paul Harris and built by Cowen Construction Co.

that concrete is one of the best building materials available.

The largest of these buildings is the Chickasha City Hall and it was the first design that I had ever studied from the very beginning in terms of architectural concrete. This study was undertaken during a search for a medium which would provide homogeneity and structural stability. As the plans progressed the manner in which architecture and structure evolved together was convincing proof that concrete was what I was looking for.

On this building the large mass over the opening in the main facade which houses a two-story vault, dominates the design. It serves to break up the length of the building and provides both the effect and function of a corner entrance nearly in the center of the structure. The line of the top of this center mass tapers down to the north, or right, to give added weight. In contrast, the office portion at the south is light and airy.

The city hall is divided into three functional units—a fire station with space for four trucks, dormitory for 12, office, kitchen and dinette; a police department with chief's office, desk sergeant's room, police court, men and women's jail quarters, and radio room; and city administrative offices with mayor's suite, council chamber and storage space.

Walls are 10 in. thick cast against 2-in. Thermax form liners on the inside, and finished with plaster on the interior. The exterior was cleaned after plywood forms were removed but received no other treatment. Floors and roof are of concrete, the first-floor areas being finished with terrazzo.

Both the West Side School and the Emerson School Auditorium in Lawton are parts of more elaborate plans that will be completed at some future date.

The West Side School is one story with a circular primary room excellently lighted for younger pupils. The floors are concrete on a sand cushion. A large platform at the entrance provides adequate space for the children to congregate outside the building without getting off the concrete when the ground is wet. Administrative offices located on both sides of the entrance provide good control of circulation throughout the building. This building had no other exterior finish than a thorough clean-down after the plywood forms were stripped. An addition of an auditorium structure at the extreme right will correct the rather rigid horizontal appearance of the classroom portion.

Emerson School Auditorium is the first unit of a school plant that will be completed by construction of a one-story classroom building similar to the West Side School. The auditorium, seating 600, is planned from the inside. The front wall follows the curvature of the rows of seats and provides for a foyer the full width of the auditorium. The side walls bear in toward the proscenium. This is a functional structure in that the walls enclose and

ɔnform to the seating within the auditorium. Walls ıroughout are smooth, bearing the texture of the plywood ɾrms. The only decorative detail is the name of the buildıg at the main coping line, and this is more ornamental ıan legible, as intended.

Farm structures are not generally considered archiɪctural subjects although there is no reason why barns ɪd dairy buildings should not be pleasing in form. Since ıe dairy barns and creamery buildings at Cameron Colıge are a part of the campus at Lawton, permanent strucıres were desirable and therefore warranted studied design.

Most interesting features of these structures, perhaps, ɾe the concrete parabolic slab roofs with their projected bs. I must admit that it was first intended to have these ɪbs inside, but since the roofs were formed on centering ıat was moved from one end of the building to the other, was considered better to construct the ribs on the outıde and permit the forms to be moved forward with but a ıinimum of lowering. Removable forms were used on the ɪxterior and concrete was placed through openings in them. ɪhe exterior forms were moved the next day after concrete ɾas placed and the concrete was finished in a manner ımilar to the walls. An expansion joint at the center rib ɛparates the large barn into two structural units. The ɾalls of all three of the dairy structures were formed against ɪlywood and given a rubbed finish. The parabolic roofs ɪ the barns are exposed concrete without roofing or other ɾeatherproofing.

Public reaction to these concrete buildings—the city all, schools and dairy structures—has been even more ɾatifying than expected, considering that the material is ɔ new to this region. The public is only just beginning to ɪppreciate the usefulness and economy of concrete, and ɔntractors and builders are just becoming familiar with ɪse of the material. When its merits have been fully recogıized, which is inevitable, Oklahoma will gain immeasurɪbly from the advantages of this most interesting structural ɪnd architectural material.

Two dairy barns and a creamery were designed by Architect Harris for Cameron College at Lawton, and built by WPA.

Arch ribs of the concrete roof project above the slab.

ıide School, at Lawton, is a single-story structure for children of grades. A. C. Shelton & Son, of Lawton, contractors.

Mound State Museum, a classic structure with primitive American designs on the frieze, is erected over two excavations at the site of an old Indian village near Moundville, Ala. A cooperative project of the National Park Service, the Alabama Museum of Natural History and the Civilian Conservation Corps.

Mound State Museum—Alabama

BY JAMES T. DEJARNETTE, ARCHITECT*

LONG before Columbus turned his three little ships to the West to discover a new route to the fabulous East only to be intercepted by a whole new world, there was a busy, prosperous Indian village on the banks of the Black Warrior River near what is now Moundville, Ala.

Excavations at the site of the old village during the past decade have revealed it to be one of the largest archaeological finds in the Western Hemisphere. Through the efforts of the Alabama Museum of Natural History the area

*Moundville, Ala.

One of the two excavations. The relics and artifacts were left as found when excavated.

s been preserved as a state monument. Recently two of : burial pits have been enclosed by a museum building.

The design of the building was developed by the ational Park Service architects from pottery found on the e. The three-step motif expressed in the three roof levels found time after time in the artifacts that have been covered. The stylized skull and bones design that makes the frieze was copied exactly from an incised ornament und on a pottery bowl. The medallion above the door a copy of a pendant found hanging around the neck of e of the skeletons.

Architectural concrete was selected as the medium at could best express our architectural purpose. With ncrete we could achieve at comparatively low cost the nple, monumental effect desired, and could produce the eze and medallion most economically by casting them place with plaster molds. Additional reasons for using ncrete were firesafety and low maintenance cost. From e first, the authorities insisted that the building be as arly firesafe as modern materials would permit.

The structure is in the form of a large central portion inked by low wings. Over-all length is 130 ft. and maxium width is 42 ft. 6 in. The wings are located directly rer the burial pits which are left just as they were uncoved by the excavating crews. The pits were protected uring construction by temporary shelters which were reoved so that the burials and artifacts in place can be ewed from a walkway around three sides of each wing.

The central portion of the building is devoted to a splay of artifacts illustrating the cultural traits of the idians who lived here, and to a series of dioramas showing ow these Moundville primitives lived.

Walls of the structure are 9 in. thick formed with 6-in. &G lumber lined with ¼-in. Presdwood in 4x10-ft. panels. he forms, which were oiled before each use, were raised ft. 6 in. at a time. After the forms were stripped the walls ere given a finish coat of oyster white portland cement aint applied with a hand spray gun.

The frieze and medallion above the door were cast in lace in plaster molds made on the site. By shellacking and ling the inside of the molds, we were able to strip them ithout damage with the result that each mold was used vice.

The structure has concrete floors and a flat slab roof ver a portion of the center room. Joists cast in place over onremovable metal pans support the slab in the clerestory nd wings.

Hot air, forced through concrete ducts, heats the building. As the best museum lighting is controlled artificial ght, there are no windows in the structure and artificial lumination is used exclusively.

Medallion over entrance was copied from a pendant found in one of the burial mounds.

Conventionalized skull and bone design found in the pits formed the motif for the plaster molded frieze.

Some Motor Service Stations in ARCHITECTURAL CONCRETE

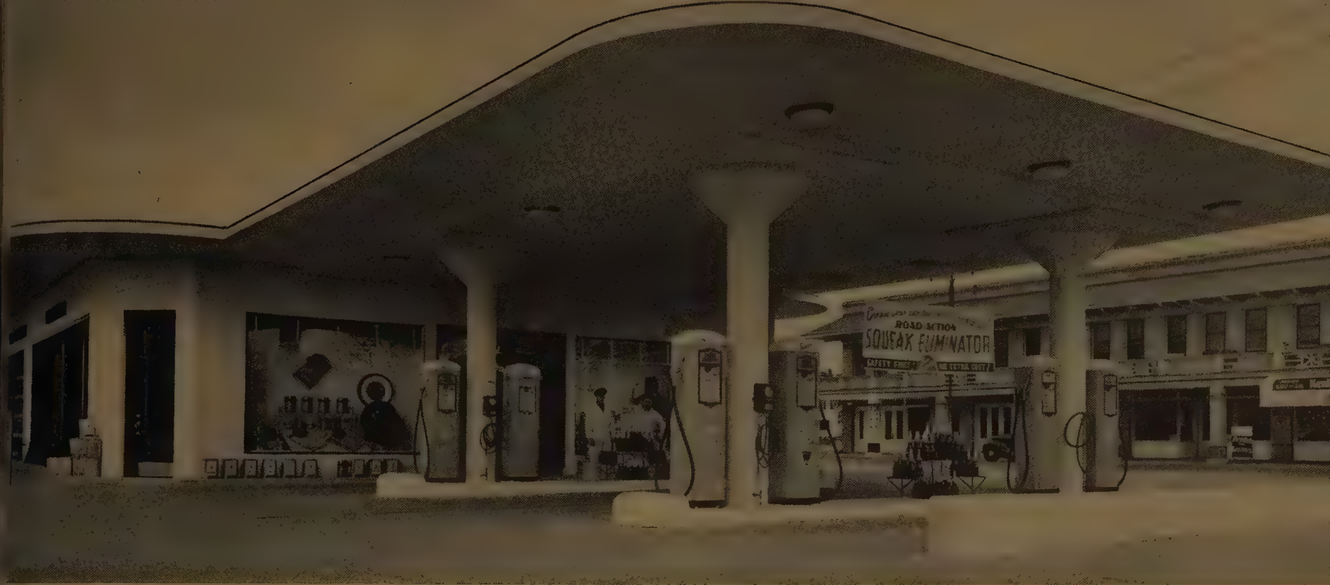
THE service stations of the North American continent are ready to serve the largest number of motorists in the history of the automobile during the summer of 1941. And they are ready for them with new and increasingly more attractive buildings and facilities. The old roadside shack and pump stations are going rapidly, often being replaced—for reasons of beauty and economy—by architectural concrete buildings. On these two pages are a few service stations in Canada and the States in which architectural concrete has been used effectively.

A concrete umbrella canopy for the Continental Oil Co. Station at Lafayette, La., was designed by A. Hays Town, architect of Baton Rouge, who has used concrete for many types of structures.

Neighbors couldn't possibly resent the appea company trademark is molded in concrete. A

Continental Oil Co. Station at Main and Southgate Sts., Houston, Texas, was designed by W. R. Brown, chief architect for Continental Oil Co. and was built by L. R. Ashmore, Houston contractor.

This building for Firestone Service Stores, I and out, finished with buff portland cement pain



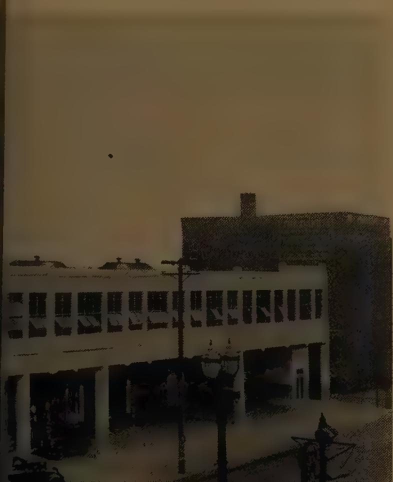
ct of the new Sears, Roebuck & Co. store at Houston, Texas, is this large service station of concrete. Designed by Nimmons, Carr & Wright, of Chicago, ·ilt with the store by Knutson Construction Co., of Houston.

tation at Spokane, Wash., on which familiar ·kane, were the builders.

Night or day, the Home Gas Station operated by Tergeson Bros., of Victoria, B. C., Canada, presents a pleasing appearance to its customers. William Frederick Gardiner, architect of Vancouver, designed it.

Cleveland, Ohio, is exposed concrete inside Johnson, engineer for Firestone.

Another Gardiner design for the Home Oil Distributors, Ltd., is likewise located in Victoria. This building, erected by Luney Bros., Ltd., of Victoria, was completed at a cost of about $7,000.



Fieldhouse at Austin, Minn., school athletic field. The project, which also includes two concrete bleachers running the full length of the playing field, was des by Toltz, King & Day, Inc., architects and engineers of St. Paul, Minn. It was built by WPA.

Athletic Plant—Austin, Minn.

By Gerald A. Anderson*, A.I.A.

AUSTIN, Minn., has just completed a district school athletic field that has been under development since 1927 when the property was obtained for that purpose by the school board. The plot of ground, 1,278 ft. long north and south by 640 ft. wide, is fortunately located on a very slight slope which provides natural drainage for the football field.

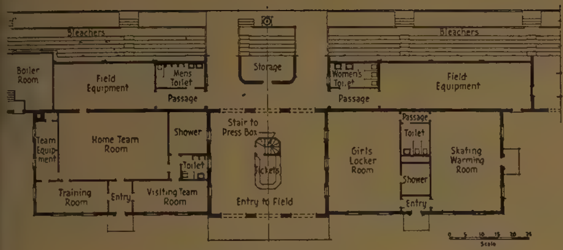
Although temporary wood bleachers were erected at the time the property was acquired, it was the intention of the school board to build a fieldhouse and permanent stands whenever money became available for that purpose. The emergency public works program brought these plans to realization more rapidly than was hoped for in 1927, and at a considerable saving to the citizens of Austin.

Preliminary plans were developed for a complete fieldhouse and for bleachers on both sides of the football field. Also included were a running track around the field, and six concrete tennis courts within the confines of the property. The architects' estimate of the cost of this work, if carried on by contract basis, would have been approximately $102,231. By employing WPA labor, the work was done at a cost of $48,024 to the school district.

Austin is a prosperous, fast-growing community located in the rich agricultural district of southern Minnesota. There is no local traditional building material and it was, therefore, considered highly proper to build the stadium and fieldhouse of architectural concrete, and by so doing gain the unusual advantages of this material in permanence and attractive appearance.

Central feature of the development is the fieldhouse which, due to the style of architecture used for most of the new residences built in the neighborhood, was designed in the Colonial tradition. The exterior wall surfaces of this

*Toltz, King & Day, Inc., architects and engineers, St. Paul, Minn.



Plan of the fieldhouse.

lding were molded against forms of 1x6 rough fir lumber h square edges. This gave a pleasing texture to the lls which were finished with two coats of white portland nent paint. Roof of the fieldhouse is of wood covered h cement-asbestos shingles salvaged from a school house ich was being razed at the time. The shingles had been d on the school for only a short time and were in excel- t condition. Trim on the building, such as shutters and ors, was painted a blue-green color.

The fieldhouse is 148x48 ft., the center portion pro- ing the main entrance to the football field. Here are ated eight ticket booths for rapid handling of crowds. the rear of the ticket booths a stairway leads to the press x and radio booth, both of which are heated and equipped the comfort of press writers and broadcasters. The ess booth is located above the east stand with a full view the field through plate glass.

South of the main entrance are team rooms, showers, kers and men's toilet. Space north of the entrance is for lls as shown in the plan. Included in the fieldhouse is o a room, kept warm in winter, for skaters who use the blic ice rink nearby. The floor of this room is wood to event damage to skates. All other floors are concrete.

The concrete bleachers are located on both sides of the aying field and are each 298 ft. 8 in. long. These bleachers, oviding seating for 3,522 allowing 18-in. seat space per rson, are 27 ft. 8 in. deep with ten rows of seats. Seats e wood slat construction, attached to the concrete bleacher floors by means of cast iron brackets. Provision is made in the west stands for special space for a 100-piece band. Concession space is also provided under the stand.

Completion of this project gives Austin one of the best athletic plants in the state, and one of the finest looking stadiums to be found in any small community. Built of concrete, it is expected to withstand conditions of cold and exposure imposed by long Minnesota winters better than any other material, and for this reason should be most economical to maintain.

Development of the athletic plant has been under the direction of S. T. Neveln, superintendent of schools of Austin, and Arthur E. Christgau, in charge of maintenance and operation of Austin schools. Mr. Neveln has always felt that the school athletic field might have possible use as a community athletic center as well as a school facility. This has been fully realized now since parts of the field have been lighted for summer evening ball games.

Toltz, King & Day, Inc., architects and engineers of St. Paul, who have designed six school developments in Austin in recent years, handled the design and supervision.

Two views of one of the concrete bleachers which includes an enclosed press booth.

The three floors and roof of Thrift Parking, an open-walled parking deck in Philadelphia, serve large department stores in the downtown district. Plann meet requirements of store customers, this structure was designed by Abbott, Merkt & Co., engineers of New York; Silverman & Levy of Philadelphia associate architects. Samuel H. Levin, of Philadelphia, was the contractor.

Metropolitan Store Parking—Philadelphi

By Hunley Abbott*

FOR the past 15 or 20 years merchants of the country—particularly the department stores—have been confronted by the serious problem of adequate parking facilities for customers. This problem has been of growing importance, since the number of cars in proportion to population has increased steadily during these years, and at a much greater rate than the creation of parking facilities to accommodate them.

The problem is a difficult one because stores are almost invariably located in the heart of the business district where land values are extremely high, and, therefore, to utilize some of this high-priced land for a garage makes the total cost of the land plus the building so high that it is difficult to break even in the cost of operation. On the other hand, if cheaper land is secured at some distance away from the store, this involves the expense of transporting customers from the remote garage to the store, or else leaves them to find their own way, which obviously is unsatisfactory.

An early attempt was made at solving the customer parking problem by a number of stores constructing completely enclosed and heated garages and operating them as a service to customers at low fees. Almost all of these enterprises proved expensive and showed material losses, so that other stores were reluctant to follow this example.

Another solution was to find some vacant land nearby where cars could be parked at street level only. This plan was encouraged by the long years of the recent depression, when vacant land was not in demand for development and, in fact, many old buildings were torn down to save taxes.

*President, Abbott, Merkt & Co., New York.

The trouble with this solution was that with only one l of parking on a vacant lot, there never was sufficient acity in the shopping district to take care of anywhere r all the people who wanted to park their cars in that ı, so this was only a half-way solution.

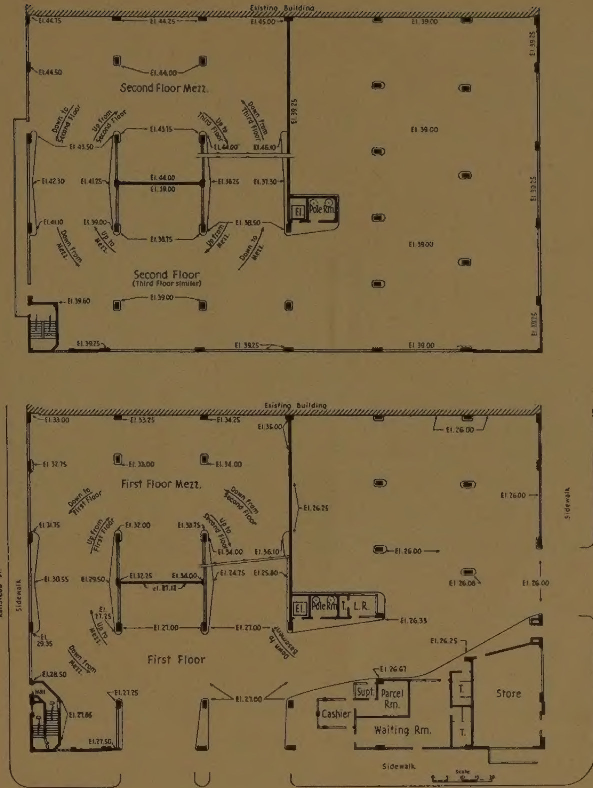
Most recent and most successful solution to the custo- parking problem is a structure called a "parking deck" ch consists of a simple structural skeleton of a building hout windows or heat, and with very simple lighting ıngements, being virtually open floors with ramps for fic up and down between the various floors.

The advantage of this type of construction is that it s only about half as much as a completely equipped enclosed garage structure, and this reduced building enables stores to operate the enterprise at less cost, viding a service for customers that is in great demand.

The development of all types of facilities for customer king, however, still lags woefully behind the demand, as a result many customers prefer to patronize suburban es or suburban branches of metropolitan stores, rather n drive into the heart of the city. This decentralization grown to such an extent that it is beginning to alarm rchants with large investments in store buildings in the rt of the city, and in some instances steps are under way ounteract this movement of retail trade to the suburbs.

When a store contemplates the erection of a customer king structure, one of the first questions that arise is: w large shall it be; that is, how many car positions shall provide? This question is not an easy one to answer ause it will depend not only on the number of customers ning to the store, but also on the general neighborhood nand for such parking. As a rule, the demand probably be greater than it is practicable to supply, so there mall chance of overbuilding.

r of the ground floor is occupied by a store, but the remainder of devoted to parking.



Typical floor plans for the Thrift Parking deck.

The records of one store show the following relation between the number of transactions in the store and the number of cars parked in the customer garage:

Day of month	No. of transactions	No. of Cars parked	Ratio
1	11,096	1,031	11
2	15,902	1,221	13
3	13,363	1,192	11
4	17,911	1,264	14
5	20,206	1,383	15
7	16,341	1,212	13
8	15,405	1,112	14
9	18,329	1,177	16
10	16,969	1,100	15
11	21,942	1,318	17
12	20,819	1,410	15
14	8,717	748	12
15	11,462	1,066	11
16	14,665	1,106	13
17	12,904	969	13
18	16,799	1,127	15
19	16,686	1,252	13
21	12,284	1,027	12
22	9,832	871	11
23	9,655	849	11
24	10,603	829	13
25	13,866	983	14
26	13,557	1,166	12
28	17,344	1,010	17
29	14,360	1,036	14
30	20,135	1,321	15
31	18,850	1,696	11

Another store's records show the following ratio between transactions and car parking:

Month	Ratio of transactions to cars parked
January	18.75
February	19.06
March	18.90
April	20.90
May	23.92
June	28.99
July	17.00
August	16.33
September	23.38
October	20.69
November	23.67
December	24.13
Average	21.31

Based on these typical examples and a general knowledge of conditions elsewhere, it would seem reasonable to say that at least one car will wish to park nearby for every 15 to 20 customers who patronize the store in a day. This figure should be useful to other store operators who contemplate customer parking structures.

One of the most recent and attractive customer parking structures of the type mentioned above is Thrift Parking at the corner of Chestnut and Eighth Sts. in Philadelphia. This is in the heart of the shopping district, immediately opposite the store of Gimbel Bros. and not far from several other large stores.

The building is of reinforced concrete, with an architectural concrete exterior, and measures about 113x173 ft. It has a basement and four upper levels, including the roof which is also used for parking. The normal number of car positions is approximately 400, and on busy days with a turnover of four cars per position it should have a total daily capacity of about 1,600 cars.

In the corner of the first floor there is a small shop leased to a tenant. Aside from this, the entire structure is devoted to car parking, with an attractive waiting room with toilet facilities, cashier, superintendent's office, employes' locker room and gasoline pumps.

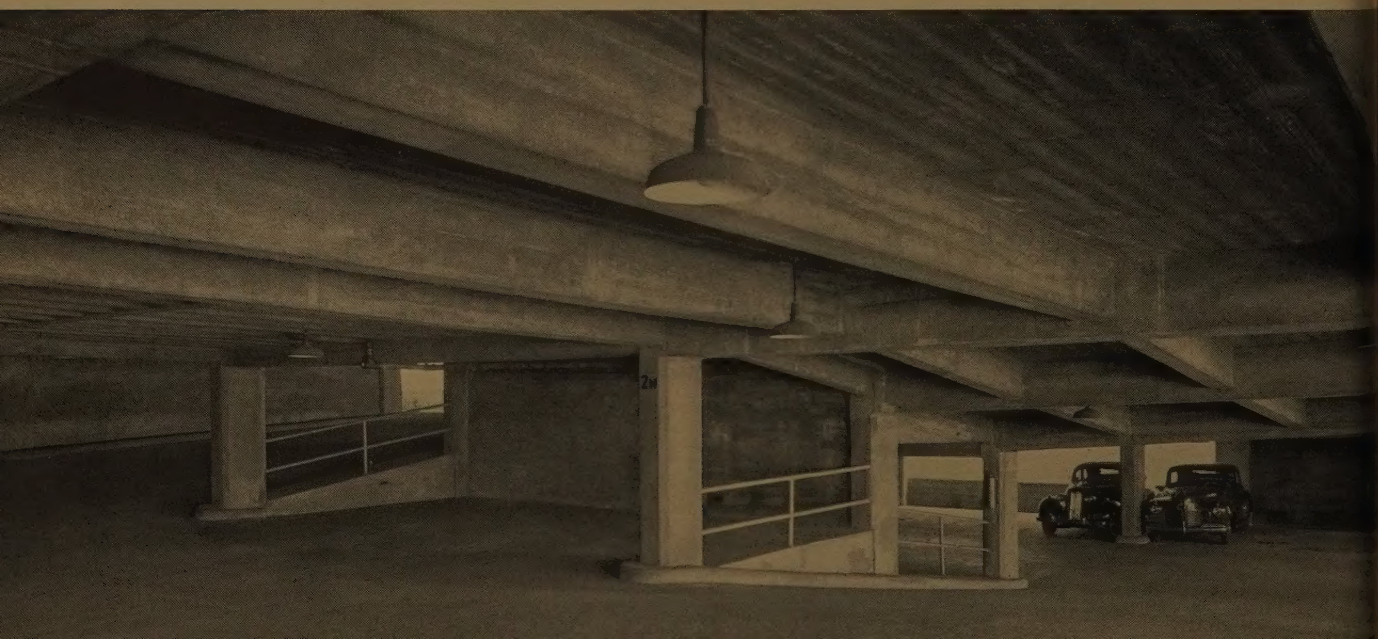
Cars are driven to the basement and the various upper levels by means of a circular ramp with a high degree of superelevation, permitting speedy handling of cars.

There is a small push button elevator for upward transportation of employes, and a pair of firemen's poles down which employes slide on their return.

There was a great need for a convenience of this character in the Philadelphia retail district, and its use is greatly appreciated by those who drive in to the center of town for shopping.

Decorative treatment is simple, a dentil band at the coping being used to terminate the walls.

Circular ramps with high degree of superelevation permit rapid and safe handling of cars from one floor to another.



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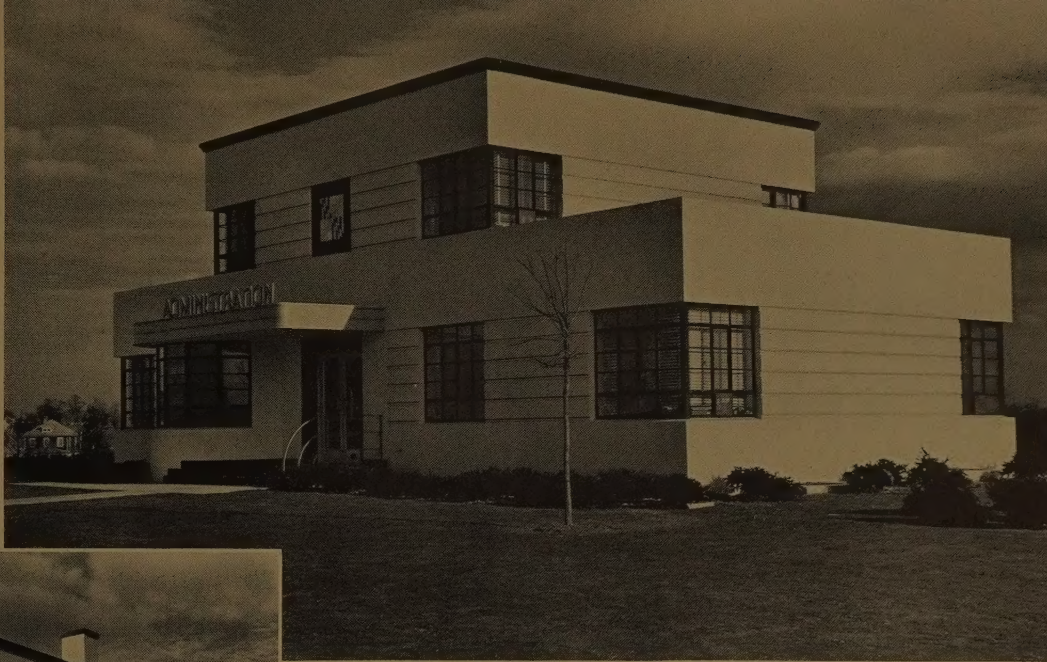
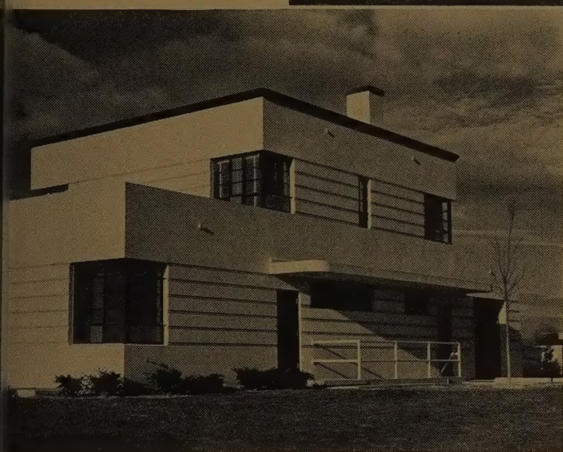




Susquehanna River Bridge Building

By Charles H. Marshall, Architect*

N Administration Building for the new Susquehanna River Bridge at Perryville, Md., is located on the ern approach to the structure and was a part of the dge project set up by the State Roads Commission of ryland. It was completed during the summer of 1940.

Design problems involved the provision of necessary ces for staff and equipment essential to toll collection, l construction of a building that would harmonize with bridge and the toll gates. It was felt that architectural crete could best express this relationship of structures, l the material was finally chosen for both aesthetic and ctural reasons.

Due to the relatively small size of the building its hori- tal features were emphasized. Broad, unbroken faces rnated with smaller bands at windows; masses were efully studied, and color was added by the use of porce- n enamel metal in dark blue for the top parapet coping l in red, white, black and yellow for the seal of the Road mmission. The semicircular bay was introduced for the uble purpose of providing good vision of the roadway and remote supervision of toll collections.

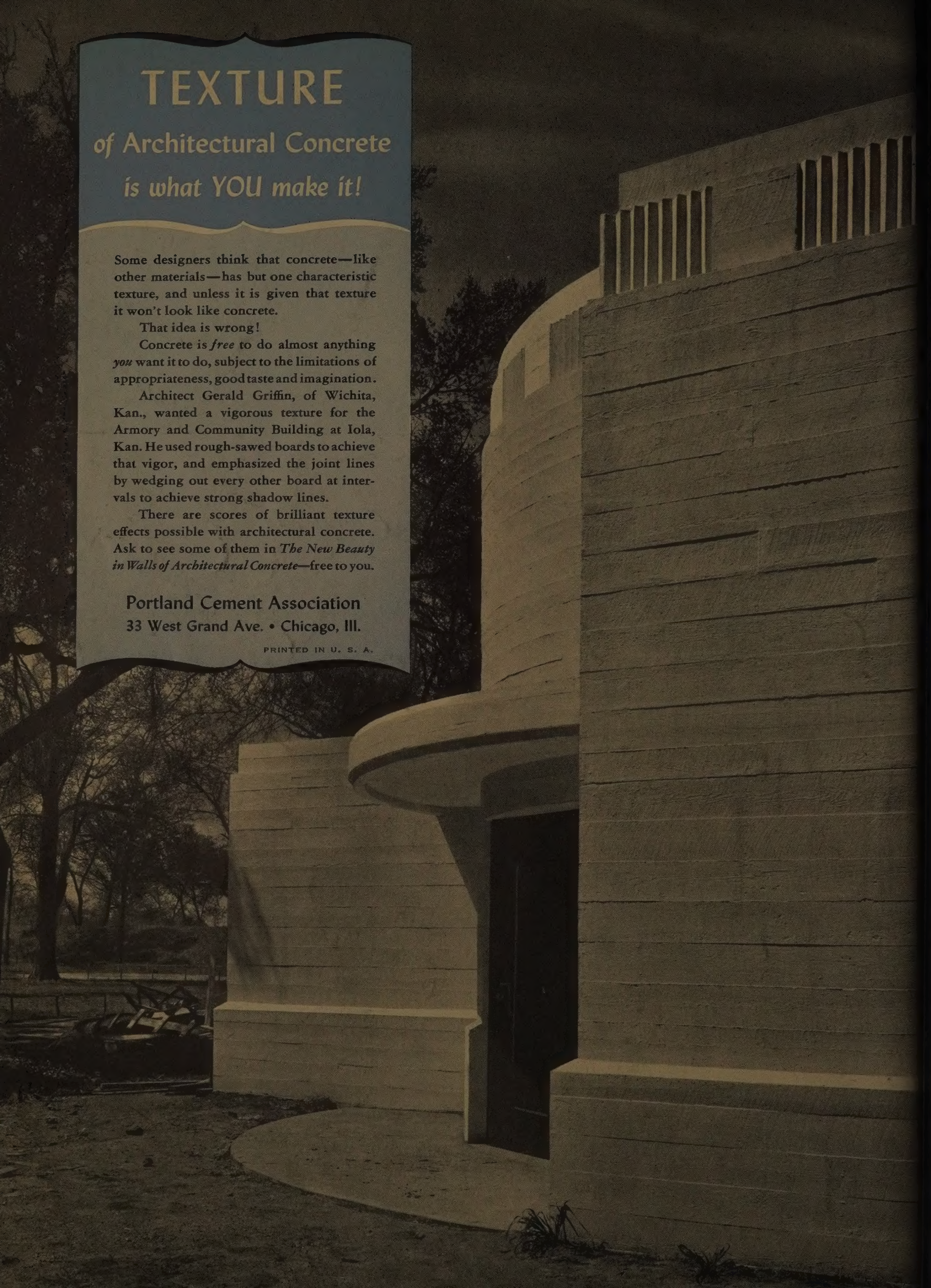
The building comprises two floors and basement and covers a ground area of 63x28½ ft. Basement is connected with toll booths by a 170-ft. tunnel of 4x5 ft., permitting passage of pipes and conduits.

Construction started in January, 1940 and was carried on largely through cold weather. No expansion joints were used due to the small size of the structure. Construction joints were predetermined and layout drawings were made of the Presdwood form lining which was shellacked to insure against staining the concrete. Exposed surfaces were cleaned by an application of cement grout which was allowed to set partially before being removed by trowel and rubbed down with burlap. Finish was several coats of white port- land cement paint.

Foundation walls are 10 in. thick while upper walls are 8 in. First and second floors are of clay tile ribbed slab construction. Interior walls are furred with tile and plastered.

J. E. Greiner Co., Baltimore, was consulting engineer for the entire bridge project including the building. E. Russell Allen was project engineer for the consultants.

E. Greiner Co., consulting engineers, Baltimore, Md.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Architect Gerald Griffin, of Wichita, Kan., wanted a vigorous texture for the Armory and Community Building at Iola, Kan. He used rough-sawed boards to achieve that vigor, and emphasized the joint lines by wedging out every other board at intervals to achieve strong shadow lines.
There are scores of brilliant texture effects possible with architectural concrete. Ask to see some of them in *The New Beauty in Walls of Architectural Concrete*—free to you.
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